

IN THE CLAIMS

This listing of claims replaces all prior listings:

1. (Currently Amended) A method in a data processing system for developing a data flow program comprising code segments that operate on data in memory, the method comprising the steps of:

dividing the memory into blocks;

assigning at least a portion of the data and at least one code segment to each block;

storing data read and data write identifiers for each code segment, the data read and data write identifiers identifying at least a portion of the data read or written by the code segment;

determining whether dependencies exist among the blocks such that a first block depends on data assigned to a second block using the read and write identifiers; and

facilitating development of the data flow program by generating a graph representing the blocks and the determined dependencies and displaying the graph to a user,

wherein the step of displaying comprises the step of displaying a graph comprising nodes assigned to the blocks and dependency arcs representing the determined dependencies, and

wherein the step of displaying further comprises the step of presenting the dependency arcs using a satisfied dependency visualization when the determined dependency is satisfied, and presenting the dependency arcs using an unsatisfied dependency visualization when the determined dependency is unsatisfied.

2. (Canceled).

3. (Canceled).

4. (Currently Amended) A method according to claim 1, further comprising the steps of:

receiving a node selection specifying a selected one of the nodes;

determining unmet dependencies for the selected node; and

displaying in a visually distinctive manner the unmet dependencies in the graph.

5. (Currently Amended) A method according to claim 1 2, further comprising the steps of:

providing for execution of the code segments using threads;
receiving a thread selection specifying at least one of the threads; and
displaying nodes executed by the at least one thread.

6. (Currently Amended) A method according to claim 1 2, wherein the nodes include executed nodes and unexecuted nodes, and wherein the step of displaying further comprises the step of displaying the unexecuted nodes using an unexecuted visualization and the executed nodes using an executed visualization.

7. (Original) A method according to claim 1, wherein the data includes a data structure, and wherein the step of displaying further comprises the step of:

facilitating visualization of at least a portion of the data structure accessed by at least one of the code segments by graphically presenting at least a portion of the data structure and accentuating the portion of the data structure accessed by the at least one code segment.

8. (Currently Amended) A method in a data processing system for developing a data flow program comprising code segments distributed between memory blocks, the method comprising the steps of:

representing the data flow program as a graph comprising nodes and node dependencies between the nodes; and

displaying the graph to facilitate visualization of the data flow program,

wherein the node dependencies between nodes are determined based on data read and data write identifiers for code segments associates with the respective nodes, the data read and data write identifiers identifying at least a portion of data read or written by the respective code segment,

wherein the step of displaying comprises the step of displaying a graph comprising nodes assigned to the blocks and dependency arcs representing the determined dependencies,

wherein the node dependencies include satisfied dependencies and unsatisfied dependencies, and

wherein the step of displaying comprises the steps of displaying the unsatisfied dependencies using an unsatisfied dependency visualization, and displaying the satisfied dependencies using a satisfied dependency visualization.

9. (Original) A method according to claim 8, wherein the nodes include executed nodes and unexecuted nodes, and wherein the step of displaying comprises the step of displaying the unexecuted nodes with an unexecuted visualization and displaying the executed nodes with an executed visualization.

10. (Original) A method according to claim 9, wherein the nodes include executing nodes, and wherein the step of displaying comprises the step of displaying the executing nodes with an executing visualization.

11. (Canceled).

12. (Currently Amended) A computer-readable medium containing instructions that cause a data processing system to perform a method for developing a data flow program comprising code segments that operate on data in memory, the method comprising the steps of:

dividing the memory into blocks;

assigning at least a portion of the data and at least one code segment to each block;

storing data read and data write identifiers for each code segment, the data read and data write identifiers identifying at least a portion of the data read or written by the code segment;

determining a dependency imparted by a first block depending on data assigned to a second block using the read and write identifiers; and

facilitating development of the data flow program by generating a graph representing the blocks and the determined dependencies and displaying the graph to a user,

wherein the step of displaying comprises the step of displaying a graph comprising nodes assigned to the blocks and dependency arcs representing the determined dependencies, and

wherein the step of displaying further comprises the step of presenting the dependency arcs using a satisfied dependency visualization when the determined dependency is satisfied, and

presenting the dependency arcs using an unsatisfied dependency visualization when the determined dependency is unsatisfied.

13. (Canceled).

14. (Canceled).

15. (Currently Amended) A computer-readable medium according to claim 12 ~~13~~, further comprising the steps of:

receiving a node selection specifying a selected node;
determining unmet dependencies for the selected node; and
highlighting in the graph the unmet dependencies.

16. (Currently Amended) A computer-readable medium according to claim 12 ~~13~~, further comprising the steps of:

providing for execution of the code segments using threads;
receiving a thread selection specifying at least one of the threads; and
displaying nodes executed by the at least one thread.

17. (Currently Amended) A computer-readable medium according to claim 12 ~~13~~, wherein the nodes include executed nodes and unexecuted nodes, and wherein the step of displaying further comprises the step of presenting the unexecuted nodes using an unexecuted visualization and the executed nodes using an executed visualization.

18. (Original) A computer-readable medium according to claim 12, wherein the data includes a data structure, and wherein the step of displaying further comprises the step of:

facilitating visualization of at least a portion of the data structure accessed by at least one of the code segments by graphically presenting at least a portion of the data structure and accentuating the portion of the data structure accessed by the at least one code segment.

19. (Currently Amended) A method in a data processing system for developing a data flow program comprising code segments that operate on data in a memory, the method comprising the steps of:

dividing into blocks the memory that stores the data;

for each block, assigning at least a portion of the data to the block and assigning at least one of the code segments to the block;

storing data read and data write identifiers for each code segment, the data read and data write identifiers identifying at least a portion of the data read or written by the code segment;

determining whether dependencies exist among the blocks such that a first block depends on data assigned to a second block using the read and write identifiers;

generating a directed acyclic graph comprising nodes and arcs between the nodes by assigning the blocks to the nodes and by assigning the dependencies to the arcs;

displaying the directed acyclic graph;

initiating execution of the code segments;

while the code segments are executing,

determining which nodes in the graph are unexecuted nodes and which nodes in the graph are executed nodes; and

displaying the unexecuted nodes in a manner visually distinctive from the executed nodes,

wherein the step of displaying comprises the step of displaying a graph comprising nodes assigned to the blocks and dependency arcs representing the determined dependencies, and

wherein the step of displaying further comprises the step of presenting the dependency arcs using a satisfied dependency visualization when the determined dependency is satisfied, and presenting the dependency arcs using an unsatisfied dependency visualization when the determined dependency is unsatisfied.

20. (Currently Amended) A data processing system comprising:

a memory comprising a data flow program and a data flow development tool that associates data processed by the data flow program to blocks in the memory, associates code segments of the data flow program to at least one of the blocks, stores data read and data write identifiers for each code segment, the data read and data write identifiers identifying at least a

portion of the data read or written by the code segment, determines dependencies between the blocks using the read and write identifiers, and displays a graph comprising nodes and arcs depicting the dependencies between the blocks; and

a processor that runs the data flow development tool,

wherein displaying the graph comprises displaying the graph comprising nodes assigned to the blocks and dependency arcs representing the determined dependencies, and

wherein displaying further comprises presenting the dependency arcs using a satisfied dependency visualization when the determined dependency is satisfied, and presenting the dependency arcs using an unsatisfied dependency visualization when the determined dependency is unsatisfied.

21. (Original) The data processing system of claim 20, wherein the nodes comprise executed nodes and unexecuted nodes, and wherein the executed nodes are displayed using an executed node visualization and the unexecuted nodes are displayed using an unexecuted node visualization.

22-26. (Canceled).